

#### ABSTRACT OF THE DISCLOSURE

This invention relates to a method of treating titania slag to increase the leachability of impurities from the slag consisting of the steps of sizing the titania slag to a particle size from 75 to 850  $\mu\text{m}$ ; oxidizing the sized slag particles at a temperature from about 700°C to below about 900°C causing the iron present in the slag to concentrate at the exposed surfaces of the slag particles and/or causing an anatase phase to stabilize in the slag, causing a major portion of the iron in the Fe(II) state to convert to the Fe(III) state, and causing the titanium in the Ti(III) state to be converted to the Ti(IV) state; and reducing the oxidized slag in a reducing atmosphere from about 700°C to about 950°C to convert a major portion of the iron in the Fe(III) state to the Fe(II) state. The invention also relates to a method of beneficiating titania slag to increase the  $\text{TiO}_2$  content thereof wherein the above treated slag is leached with acid.